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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Adrien Gasse

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EXAMINER

ARCIERO, ADAM A

ART UNIT

PAPER NUMBER

1727

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/574,756	Applicant(s) GASSE ET AL.	
	Examiner ADAM A. ARCIERO	Art Unit 1727	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-50 is/are pending in the application.
- 4a) Of the above claim(s) 42-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26,27 and 29-41 is/are rejected.
- 7) ☒ Claim(s) 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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LAYER AND METHOD FOR MICROBATTERY PROTECTION BY A CERAMIC-METAL DOUBLE LAYER

Examiner Adam Arciero

S.N. 10/574,756

Art Unit 1727

December 16, 2010

DETAILED ACTION

1. The Applicant's response filed on October 11, 2010 was received. Claims 26-50 are currently pending. Claims 42-50 are withdrawn from consideration.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in a prior Office Action.

Claim Rejections - 35 USC § 102

3. The claim rejections under 35 U.S.C. 102(e) as being anticipated by Meitav et al. on claims 26, 29-31 and 41 are withdrawn, because Applicant's arguments are persuasive.

Claim Rejections - 35 USC § 103

4. The claim rejections under 35 U.S.C. 103(a) as being unpatentable over Meitav et al. and Sekido et al. on claim 27 is withdrawn, because Applicant's arguments are persuasive.
5. The claim rejections under 35 U.S.C. 103(a) as being unpatentable over Meitav et al. and Neudecker et al. on claims 32-33 and 37-38 are withdrawn, because Applicant's arguments are persuasive.

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6. The claim rejections under 35 U.S.C. 103(a) as being unpatentable over Meitav et al., Neudecker et al. and Katz et al. on claim 36 is withdrawn, because Applicant's arguments are persuasive.

7. The claim rejections under 35 U.S.C. 103(a) as being unpatentable over Meitav et al., Neudecker et al. and Verma et al. on claims 39-40 are withdrawn, because Applicant's arguments are persuasive.

8. Claims 26-27, 32-35 and 37-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verma et al. (US 2002/0071989 A1) in view of Neudecker et al. (US 6,168,884 B1).

As to Claims 26-27, Verma et al. discloses an energy storage device comprising at least one anode, a dielectric and a cathode (Abstract). Said device further comprises a protective layer formed over at least in part of the elements described above. Verma et al. teaches wherein said protective layer comprises silicon dioxide (paragraph [0026]). Verma et al. does not specifically disclose wherein said protective layer is formed of a metal or metal alloy having sufficient thermomechanical resistance to absorb thermomechanical deformations without causing fissures to appear, the metal or the metal alloy having an expansion coefficient less than $6 \cdot 10^{-6} \text{ }^{\circ}\text{C}^{-1}$.

However, Neudecker et al. teaches an energy storage device comprising an overlying (protective) layer which covers at least part of said energy storage device, wherein said layer can be formed of metals and metal alloys comprising Zr (col. 5, lines 32-40). At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the device of Verma et al. by placing an overlaying/protective layer of Zr or an alloy thereof, because

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Neudecker et al. teaches that an impervious barrier to the transport of atomic lithium while maintaining a smooth flat interface for accumulation of the underlying, electrochemically plated lithium anode. Furthermore, Neudecker et al. teaches wherein the protective layer can be silicon dioxide or Zr or a Zr-containing alloy (col. 5, lines 32-40). Neudecker et al. is clearly teaching that the two materials are recognized as functional equivalents when forming an overlying layer on an energy storage device. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to substitute the Zr layer of Neudecker et al. for the protective layer containing silicon dioxide of Verma et al., because Neudecker et al. teaches that they are recognized equivalents. Verma et al. and Neudecker et al. does not specifically disclose wherein the metal or metal alloy has a sufficient thermomechanical resistance to absorb thermomechanical deformations without causing fissures to appear and further having an expansion coefficient less than that claimed in claim 26. However, it is the position of the Examiner that the properties of the metal alloy (Zr or Zr-containing alloy) protective layer, such as having a sufficient thermomechanical resistance as described above and an expansion coefficient less than 6.10^{-6}C^{-1} , are inherent, given that the materials of Neudecker et al. and the present application are the same. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. Inherency is not established by probabilities of possibilities. In re Robertson, 49 USPQ2d 1949 (1999).

As to Claims 32-35, Verma et al. discloses wherein an electrically insulating layer **38** of aluminum oxide is located between the elements of the device and the outermost protective layer (Zr or Zr alloy taught by Neudecker et al., substituted for the outermost silicon dioxide layer of

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Verma et al.) (Fig. 2 and [0027]).

As to Claims 37-38, Verma et al. discloses wherein said electrically insulating layer is a nitride such as Si_3N_4 (paragraph [0026]).

As to Claims 39-40, Verma et al. discloses wherein said layer is a carbide such as SiC (paragraph [0026]).

As to Claim 41, Verma et al. discloses wherein the device is encapsulated by the protecting layer (Abstract).

9. Claims 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verma et al. (US 2002/0071989 A1) in view of Neudecker et al. (US 6,168,884 B1) as applied to claims 26-27, 32-35 and 37-41 above and in further view of Meitav et al. (US 6,790,556 B1).

As to Claims 29 and 31, Verma et al. and Neudecker et al. does not specifically disclose wherein the device comprises at least one other protective layer as described in the claim.

However, Meitav et al. further discloses at least one other protective layer formed of a metal such as gold (col. 7, lines 11-25). At the time of the invention, it would have been obvious to modify the device of Verma et al. and Neudecker et al. because Meitav et al. teaches that an outer casing with enhanced conductivity can be achieved with such a layer by reducing the outer casing's resistance. Furthermore, it is the position of the Examiner that the properties of the second protective layer, such as having a sufficient thermomechanical resistance as described in the claim, are inherent, given that the materials of Meitav et al. and the present application are very similar. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the

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reference. Inherency is not established by probabilities of possibilities. In re Robertson, 49 USPQ2d 1949 (1999).

As to Claim 30, Meitav et al. does not specifically disclose wherein the second protective layer is formed of a metal having a Vickers hardness less than 50. However, it is the position of the Examiner that the properties of the second protective layer, such as having a Vickers hardness less than 50, are inherent, given that the materials of Meitav et al. and the present application are very similar. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. Inherency is not established by probabilities of possibilities. In re Robertson, 49 USPQ2d 1949 (1999).

10. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verma et al. (US 2002/0071989 A1) in view of Neudecker et al. (US 6,168,884 B1) as applied to claims 26-27, 32-35 and 37-41 above, and further in view of Katz et al. (US 6,200,704 B1).

As to Claim 36, the combination of Verma et al. and Neudecker et al. does not specifically disclose wherein the insulating layer is made of a sulphide.

However, Katz et al. teaches of a battery comprising a protective layer to protect the negative electrode, composed of metal sulfides or nitrides (col. 9, lines 10-21). Katz et al. is clearly teaching materials such as metal sulphides and nitrides used as protecting insulating layers for anodes in batteries as being functionally equivalent. Therefore, it would have been obvious to one of ordinary skill in the art to substitute a metal sulphide layer for the nitride layer in Verma et al. and Neudecker et al.

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Response to Arguments

11. Applicant's arguments, see Remarks, filed October 11, 2010, with respect to the rejection(s) of claim(s) 26-27 under 35 U.S.C. 102(e) and 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection was made above.

Allowable Subject Matter

12. Claim 28 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The closest prior arts of record, Meitav et al., Neudecker et al., Verma et al. and Katz et al. do not teach or suggest wherein the protective layer is formed of a nitrated alloy chosen from the group WN_x , TaN_x , MoN_x , ZrN_x , TiN_x and AlN_x wherein $x < 1$.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADAM A. ARCIERO whose telephone number is (571)270-5116. The examiner can normally be reached on Monday to Friday 7am to 4pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Adam A Arciero/
Examiner, Art Unit 1727

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1727